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ABSTRACT

Tutoring has been widely accepted as a remedy for academic deficiencies, yet actual short and long range results of tutorial programs are seldom examined. In this study 201 students from four associate degree nursing programs received tutorial assistance in freshman courses. Results indicated that students and tutors perceived tutoring as helpful in learning course material; a higher proportion of tutored students received satisfactory grades than did a control group; attrition rates of tutored and control groups were not significantly different; and State Board Examination scores of tutored and control groups were not significantly different. (Author)

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# MULTIPLE CRITERIA FOR EVALUATING TUTORIAL EFFECTIVENESS IN A TWO-YEAR NURSING PROGRAM

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ABSTRACT

Tutoring has been widely accepted as a remedy for academic deficiencies. Yet, actual short-and long-range results of tutorial programs are seldon examined. In this study 201 students from four associate degree nursing programs received tutorial assistance in freshman courses. Results indicated that 1) students and tutors perceived tutoring as helpful in learning course material, 2) a higher proportion of tutored students received satisfactory grades than did controls, 3) students who attended ten or more tutorial sessions obtained higher grades than students who attended sessions less frequently, 4) State Board Examination scores of tutored and control groups were not significantly different, and 5) attrition rates of tutored and control groups were not significantly different.

# MULTIPLE CRITERIA FOR EVALUATING TUTORIAL EFFECTIVENESS IN A TWO-YEAR NURSING PROGRAM

The need to reduce the dropout rate in nursing education is quite urgent. Up to one-half of the students who are admitted to associate degree nursing programs fail to graduate (Council of Baccalaureate and Higher Degree Programs, 1970). Walsh (1972) stated that it is essential to work for improvement in the quality of nursing education as well as for increased numbers of nurses. At a time when nursing staff shortages are felt in many hospitals throughout the United States, the loss of potential nurses is quite critical.

Students often do not complete their nursing education because of academic deficiencies. Taylor et al (1966) reviewed 18 studies of dropouts in schools of nursing. In 13 of the 18 studies, failure in course work was shown to be the number one reason for student withdrawals.

Many institutions, including nursing schools, have focused attention on students who have academic difficulties. Several different types of remediation programs have been developed and implemented: pre-college enrichment sessions, group and individual counseling, diagnostic evaluations, help for special difficulties, tutoring, and various combinations of these programs.

Among remediation programs, tutoring has been extolled by many as an optimum educational arrangement (Shaver & Nuhn, 1971). Community centers, poverty agencies, local colleges, and high schools have frequently sponsored tutorial programs (Losak, 1972). Advocates of remedial programs desire to offer each student the opportunity to develop his individual capacities - academic, vocational, and personal - as completely as possible.

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Although it is generally assumed that students profit from tutoring programs, systematic data to confirm the claimed effects are seldom gathered. Where attempts are made to evaluate effectiveness of tutoring, several measurement problems occur. Losak (1972) stated that control groups are frequently not used in studies of remedial programs. Often leaders of remedial programs feel it "unethical" to deny students enrollment in a program that is believed to be good for them. Without the use of one or more control groups, it is impossible to make valid comparisons (Campbell & Stanley, 1966). Matching subjects on one or more variables is generally the most frequently used method for constructing control groups. Although matching has many disadvantages, Kerlinger (1965) stated that it can be useful if there is a substantial correlation between the matching variables (5) and the dependent variable. Another problem in evaluations of tutorial programs is the use of only one criterion or outcome measure. Tutorial programs involve a variety of processes and outcomes. Hence, using only one measure to judge the value of a program is inappropriate at best.

This study was designed to evaluate a tutorial program for associate degree nursing students using multiple and short - and long - range assessment criteria.

## Method

### Subjects.

The 201 students who participated in the tutorial program were enrolled at four Indiana University associate degree nursing programs. All four schools of nursing have been accredited by the National League for Nursing. All of the students who participated were admitted in 1971 and 1972. All students were freshman at the time they were tutored, and all but two were females.

### Procedure.

Courses. In 1970-1971 an attempt was made to identify freshman courses in which many students received poor or unsatisfactory grades. The director of

each school of nursing was asked to identify courses in which students at her campus had the most difficulty. Students records were then examined to determine the courses in which students received the greatest number of D's and F's. The five freshman courses thus identified included anatomy, physiology, microbiology, psychology, and fundamentals of nursing. The preventive remedial instruction was limited to these first-year courses, since few students who survive the first year fail courses in the second year.

Student selection. Information for predicting student grades in specific freshman courses were gathered for full-time students entering each school of nursing in 1970, 1971, and 1972. These data were obtained from student academic records and from a 90-minute administration of several tests and questionnaires. Predictor variables used included: high school rank, high school grade averages in math, science, and English courses; overall high school grade average; amount of previous education; probation status at time of admission; general test and anxiety; creativity; reading and vocabulary; and student's stated lowest acceptable grade for each of the freshman courses (Miller, 1974).

Data gathered from students entering in the 1970-1971 academic school year were used to develop multiple regression equations for predicting course grades for students entering in the 1971-1972 school year. In a similar manner, data collected in the 1971-1972 school year were used to predict student grades during the 1972-1973 school year. The levels of predictability for the five freshman courses remained about the same for the two years. The multiple R's ranged from a low of .41 to a high of .87 with an average somewhere around .65. Operational validations for each regression equation with students from the following year revealed some shrinkage. These validations ranged between .10 and .57 and averaged about .42.

The following procedure was used to assign students to either the experimental or control condition. Once a course was designated for tutoring, the multiple regression equation developed from student data in the previous year was used to predict student grades in that particular course. Students were then ranked on the basis of their predicted grades. Systematic selection was carried out by starting at the bottom of the list, and assigning every other student to either the experimental (tutoring) or control condition until the group quotas of five students were filled. Assignment of students to either experimental or control conditions was done for specific courses.

Students in the control group attended regular classes and used assistance normally available at each school of nursing. Students in the experimental group attended regular classes but also participated in special remedial tutoring sessions. These two groups were observed throughout the two years of the nursing program and until they took the State Board Examination (SBE).

During orientation week in 1971 and 1972, students were informed by a memo that special tutorial classes would be organized during the coming school year. At the testing session, students were advised that tutoring would involve a small number of students on an experimental basis; and if the tutorial groups were successful, the university might develop plans to make tutoring available to more students wishing to enroll. Nursing students who had been randomly selected by the procedures described above were invited to attend tutoring sessions. They were told that they had been randomly selected and that the tests had indicated they would profit from the sessions. More than half of the students (69%) who were invited to attend participated in the program.

Tutoring. Tutorial sessions were held in summer, fall, and spring semesters at each campus over a two-year period. Tutoring groups were formed by the first or second week of each semester and met once a week for two hours for the duration of the semester. Tutoring was done by instructors familiar with the course content. Emphasis was placed on covering material tested in the classroom. The average number of students in a group was three and ranged from two to six students per group. Students attended approximately 80% of the tutorial sessions.

Evaluation Criteria

A number of criteria were used to assess outcomes of the tutorial program: tutor and tutee evaluations of tutoring, course grades, scores on the State Board Examination, and attrition rates.

Questionnaires. At the end of each semester, tutors and students responded to questionnaires specially developed for this study. The Tutor Questionnaire contained 24 items concerning their preparation for tutoring sessions, methods used while tutoring, and contact with students. Tutors were also asked to comment on special problems and ways to improve the tutoring program. On the Tutee Questionnaire, students responded to 24 items dealing with tutor preparation, tutor attitude, and overall helpfulness of the tutoring sessions.

Course grades. Comparisons of experimental (tutored) and control groups were done for final course grades. Four chi-square contingency tables (2 x 2) were developed comparing the number of tutored students who received satisfactory grades (A's, B's, or C's) and unsatisfactory grades (D's or F's) with control students in these same categories. Comparisons were done for science courses including anatomy, physiology, and microbiology; for psychology courses; for nursing courses and for all of the three areas combined.

A further breakdown was done to assess the relationship between students' attendance at the tutoring sessions and their final grade for the course being tutored. Two 2 x 2 chi-square analyses were performed. One was used to determine whether students who were present for 80% or more tutoring sessions obtained a greater frequency of satisfactory grades than those who were present less than 80% of the sessions. The other analysis was done to compare course grades of students who attended ten or more tutoring sessions with grades of students attending fewer than ten sessions. Both analyses were necessary since the various tutorial groups met for different numbers of sessions.

SBE scores. The State Board Examination is administered three times a year by the State of Indiana for nurse licensure. Graduates of associate degree nursing programs are required to take and pass the SBE to be licensed as a registered nurse. The majority of nursing students who entered one of the four schools of nursing in 1971 took the SBE in the summer of 1973. Students entering in 1972 generally took this examination in the summer of 1974. The five areas of this examination include: (a) Medical Nursing, (b) Surgical Nursing, (c) Pediatric Nursing, (d) Obstetric Nursing, and (e) Psychiatric Nursing. Scores for each area are standardized with a mean of 500 and standard deviation of 100. Nursing graduates scoring below 350 in any area must retake that section of the SBE until they pass. Analysis of variance was used to examine the differenees between tutored and control groups for the five SBE areas.

Attrition rate. Information was secured for all students concerning withdrawal or continuation in the program at the end of each semester. Chi-square analysis was used to assess the effectiveness of tutoring in terms of attrition. Tutored and control students were compared on the basis of whether they remained to complete the program or whether they dropped out.

## Results

Questionnaire.

One hundred and sixty-two Tutee Questionnaires were returned by students who participated in tutoring. The item on this questionnaire most closely related to tutoring effectiveness was, "Was the tutor helpful in learning material in the course?" Of the 162 students who responded, 78 (48%) replied "Very Much," 57 (35%) replied "Quite a Bit," 25 (15%) replied "Very Little," and 2 (1%) replied "None." Thus approximately 83% of these students felt the tutoring had helped them either very much or quite a bit.

A total of 35 Tutor Questionnaires were returned by the tutors. The item on this questionnaire similar to the one rated by students read, "Do you think you helped the students in learning the material of the course?" Of the 35 responses, 7 (20%) replied "Very Much", 23 (66%) replied "Quite a Lot," 5 (14%) replied "Very Little," and no one replied "None". Thus 86% felt they helped very much or a lot.

Course Grades.

Analyses were carried out to assess the effectiveness of the tutoring program in terms of grades earned in courses. For all courses combined, 79% of the tutored students and 61% of the control students received satisfactory grades. Chi-square analysis indicated that this difference was significant (Chi-square = 14.55, df = 1, $p < .01$).

A breakdown and analysis by type of course revealed that students tutored in science courses received a greater number of satisfactory grades and fewer unsatisfactory grades than did the non-tutored group, (Chi-square = 11.28, df = 1, $p < .01$). Comparisons for psychology and nursing courses revealed no significant differences between grades of the tutored and control groups (Chi-square = .40, df = 1, N.S.; and Chi-square = 1.86, df = 1, N.S., respectively).

Of those students present for 80% or more tutorial sessions, 77% received satisfactory grades in the tutored courses while 71% of those present for less than 80% of the sessions obtained grades of A, B, or C. Chi-square analysis indicated that this difference was not significant (Chi-square = .15, df = 1, N.S.) Analysis of course grades by number of times present at tutoring sessions revealed different results. Approximately 88% of the students who attended ten or more tutoring sessions received satisfactory grades while 66% of the students attending less than ten sessions received grades of A, B, or C. This difference was significant (Chi-square = 4.78, df = 1, $p < .05$).

SBE Scores.

One-way ANOVA was used to evaluate the effect of the tutorial program in each of the five SBE areas. Although tutored students scored higher than controls in four of five SBE areas, none of the differences was significant.

Attrition Rate.

Tutored and control students were compared on the basis of whether they remained to complete the nursing program or whether they dropped out. Fifty percent of the students who received tutoring graduated from one of the four associate degree nursing program. Thirty-nine percent of the students who received no tutoring graduated. A 2 x 2 chi-square analysis of attrition by tutored and control students revealed that this difference was not significant. (Chi-square = .40, df = 1, N.S.).

## Conclusion

Failure in coursework is generally listed as the primary reason for student withdrawals at schools of nursing. Tutoring is one of several methods used to assist students with academic difficulties. Students invited for tutoring in this study were those predicted to receive low grades in specific courses.

The primary emphasis during tutoring sessions was to assist students in learning the material covered in the classroom. Both tutors and students generally felt that this objective had been met.

In general the tutored students obtained more satisfactory grades than did their controls. A breakdown by course type revealed that tutoring was more effective for science courses than for psychology or fundamentals of nursing. Perhaps science courses such as anatomy, physiology, and microbiology are more amenable to tutoring because they are more structured in content. A further breakdown by attendance rates of the tutored students indicated that students who were present for the most sessions obtained higher grades than students who were present less frequently. This finding is similar to that of Glanzrock and Stahl (1971) who found a greater impact on student grades with an increase in amount of tutoring.

If one looks at the longer range criteria, however, the relative effectiveness of tutoring does not appear to be so strong. Although SBE scores and attrition rates favored tutored students, differences were not significant. Several factors may underly this finding. Although failure in classwork is listed as the major reason for student withdrawals, there are other causes for attrition. These include financial difficulties, dislike of nursing, poor motivation, and personal or family problems. If tutoring does indeed help students to obtain satisfactory grades in courses, these temporary gains in achievement may be offset by other factors which are responsible for students dropping out of the university.

Tutoring was shown to be an effective method of increasing student achievement in specific courses in an associate degree nursing program. Yet evaluation of longer range criteria such as SBE performance and attrition rates yielded inconclusive results. If overall reduction in the dropout rate of

nursing students is the goal of an institution, then focusing upon programs to improve student academic performance may be a partial solution to the overall problem. Attention should also be given to problems that occur in students' personal lives.

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## APPENDIX A

### Project Calendar

I. June 1970 through May 1971

A. Gather data from cumulative records and testing for students who entered at four schools of nursing in 1970.

B. Develop multiple regression equations for predicting grades in anatomy, physiology, microbiology, psychology, and fundamentals of nursing.

II. June 1971 through May 1972

A. Gather data from cumulative records and testing for students entering in 1971.

B. Use regression equations developed in 1970 to predict grades of students who enter in 1971.

C. Organize and maintain tutorial groups each semester.

D. Develop new multiple regression prediction equations from 1971 data base.

E. Collect and analyze data each semester.

III. June 1972 through May 1973

A. Gather data from cumulative records and testing for students entering in 1972.

B. Use regression equations developed in 1971 to predict grades of students who enter in 1972.

C. Organize and maintain tutorial groups each semester.

D. Collect and analyze data each semester.

IV. June 1973 through October 1974

A. Obtain SBE scores of students who entered in 1971 during September 1973.

B. Obtain SBE scores of students who entered in 1972 during September, 1974.

C. Do final data analyses comparing tutored and control groups in terms of:

1. Grades earned in specific courses
2. Performance on the SBE
3. Attrition rates

APPENDIX B

## ORIENTATION AND TRAINING PRINCIPLES

1. Friendly conversation with each tutee each time.
2. Reinforce each tutee one or more times each session.
3. Always recognize a correct performance.
4. Never say, "That's wrong." Just show the right way.
5. After error, make sure tutor does it correctly.
6. If no response from tutee, tutor repeats in different words.
7. Never get exasperated.
8. Call or run down absentees.
9. Check on assignments and tests in all courses.
10. Discuss study habits and procedures.
11. Watch for and inquire about personal problems.
12. Refer if necessary; such as marital counselor.
13. Help student identify significant information.
14. A volunteer listing of "Big Sisters" will be prepared by the principal investigator for the tutor and the tutee's selection of a Big Sister for each student.
15. Tutee should acquaint himself (herself) with the professor of the scheduled course by having at least one office visit.
16. Tutor should be available for student assistance.

## SUPERVISION

1. Direct observation
2. Interaction analysis
3. Interview with each tutor
4. One outside observer

## FINAL EVALUATIONS

1. Student performance (grade in course).
2. Questionnaire to each tutee.
3. Interview with tutee.
4. Questionnaire to teacher of course in which tutee was enrolled.
5. Questionnaire to tutor.
6. Supervisor's views.
7. Tutor's view (from tutor's weekly report).

## STUDENT ASSIGNMENT

Bring textbook and class notes to each tutorial session.

## APPENDIX C

### TUTEE QUESTIONNAIRE
NURSING TUTORIAL PROGRAM
Evaluation Form
(Student)

NAME _____ CITY _____ DATE _____

SUBJECT _____

1. Was your tutor helpful in learning material in the course?

- ☐ Very much
- ☐ Quite a bit
- ☐ Very little
- ☐ None

Comment _____

_____

2. Did your tutor know the material he (she) was helping you learn?

- ☐ Very well
- ☐ Quite well
- ☐ Slightly
- ☐ Not at all

Comment _____

_____

3. Did your tutor complain, scold, or criticize you or the class?

- ☐ Very frequently
- ☐ Quite often
- ☐ Occasionally
- ☐ Never

Comment _____

_____

4. Did your tutor praise or encourage you or the class?

- ☐ Very frequently
- ☐ Quite often
- ☐ Occasionally
- ☐ Never

Comment _____

_____

5. Did your tutor appear to be prepared for the meetings?

- ☐ Always
- ☐ Most of the time
- ☐ Half of the time
- ☐ Occasionally
- ☐ Never

Comment _____

_____

6. Did the tutorial classes help you in any way with your other classes in other subjects?

- ☐ Yes
- ☐ Uncertain
- ☐ No

Comment _____

_____

7. Did you have a good meeting room?

- ☐ Yes
- ☐ No

Comment _____

_____

8. Did you ever get help from the tutor outside the regular sessions?

☐ Yes

☐ No

Comment _____

_____

9. Did the tutor help you with preparation for tests and assignments in the course?

☐ Very much

☐ Quite a lot

☐ Some

☐ A little

☐ Not at all

Comment _____

_____

10. Did the tutor help you find the correct approach when you made a mistake or needed help?

☐ Yes

☐ No

Comment _____

_____

11. Did you ever get to talk to the tutor on a friendly or personal basis in class or in his office?

☐ Yes

☐ No

Comment _____

_____

12. Were you ever absent from a session?

- ☐ Yes
- ☐ No

Comment _____

_____

13. If you were ever absent, did the tutor call you or check on your absence?

- ☐ Yes
- ☐ No

Comment _____

_____

14. Did the tutor check on how well you were doing on tests or assignments in the course?

- ☐ Frequently
- ☐ Occasionally
- ☐ Never

Comment _____

_____

15. Did the tutor ever talk to you or the group about study habits or methods?

- ☐ Frequently
- ☐ Occasionally
- ☐ Never

Comments _____

_____

16. Did the tutor ever encourage you or others to go to see the professor who was teaching the course?

☐ Yes

☐ No

Comment _____

_____

17. Did you have a big sister?

☐ Yes

☐ No

18. Was she helpful?

☐ Yes

☐ No

19. How? _____

_____

20. What special problems, if any, did you face in or as a result of this tutorial program? _____

_____

_____

_____

21. What would you do, if anything, to really improve this tutor program?

_____

_____

_____

_____

_____

_____

22. How many students were in your tutored group most of the time?_____

23. How would you rate the size of the tutored group?

A. ☐ Too many students for tutor to really help us.

B. ☐ Just right.

C. ☐ Too few students. Tutor could do a better job if there were more.

If you checked A or C, what would you consider the ideal number?_____

24. Have you ever been in any tutorial groups since graduation from high school?

☐ Yes

☐ No

25. What other tutorial activity have you participated in?

When_____

From_____ To_____

What subject matter?_____

26. If you answered "yes" to 24 above, how beneficial was the tutoring in this program compared with other tutorial work?

☐ This program was better than other.

☐ This program was about equally helpful.

☐ This program was not as good.